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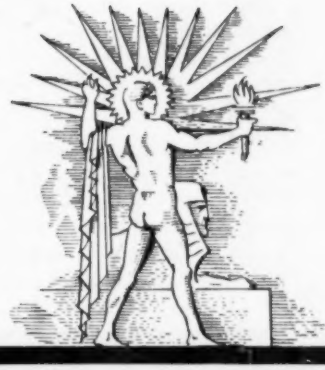
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



October 26, 1940

Warm and Safe

See Page 259

A SCIENCE SERVICE PUBLICATION

Do You Know?

American *oil* men recently found oil in England, where it has long been sought.

A Crow Indian never converses with his *mother-in-law*—it's a tribal custom for avoiding possible conflict.

A pinch of *soda* with green vegetables while being cooked will destroy the valuable vitamin B_1, anti-neuritic vitamin.

Writing paper from leaves and vines of *potato plants* is being made by a German paper factory.

Sweden's 1940 crop of *winter wheat* is estimated at only 10,690,000 bushels, compared with 25,320,000 in 1939.

Over one million *tulips*, a gift of the Netherlands to the City of New York, have been planted along the Henry Hudson Parkway.

The war has apparently not interfered very much with shipments of *wild birds* and animals from foreign countries to the United States.

In 1904, an *automobile* created excitement by making a 93-mile non-stop run from New York to Waterbury, Connecticut, averaging 13 miles per hour.

By following a simple rule, civilians are advised that they may save lives and help police, should they ever find a *suspected bomb*: "Don't touch the suspected package or object, but notify officials trained to handle such cases."

An air-raid *shelter* pillbox that can be set up in five hours is an American manufacturer's model.

Rayon rugs are new, replacing some of the imported wool lines.

Among the modern world's transportation aids, 3,000,000 *camels* must be included.

A baby normally has trebled birth *weight* at one year of age.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.*

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RESOURCES

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SCIENCE NEWS LETTER

Vol. 38 OCTOBER, 26, 1940 *No. 17*

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 2101 Constitution Avenue, Washington, D. C. Edited by WATSON DAVIS.

Subscriptions—$5.00 a year; two years $7.00; 15 cents a copy. Ten or more copies to same address, 5 cents a copy. Back numbers more than six months old, 25 cents.

In requesting change of address, please give your old address as well as the new one, at least two weeks before change is to become effective.

Cable address: Scienserve, Washington.

Entered as second class matter at the postoffice at Washington, D. C., under the Act of March 3, 1879. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to Periodical Literature, Abridged Guide, and in the Engineering Index.

Members of the American Association for the Advancement of Science have privilege of subscribing to SCIENCE NEWS LETTER at $3 a year.

The New York Museum of Science and Industry has elected SCIENCE NEWS LETTER as its official publication to be received by its members.

Advertising rates on application. Member Audit Bureau of Circulation.

SCIENCE SERVICE is the Institution for the Popularization of Science organized 1921 as a non-profit corporation.

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PHOTOGRAPHY

New Photographic Film Will Wear Longer, Store Better

Inventor of Nylon Is Posthumously Awarded Patent On Film Base of Same Substance for Movies or Stills

A NEW kind of photographic film, that wears longer in use, and stores better than the cellulose nitrate and cellulose acetate films now universally used, has been devised in the laboratories of E. I. du Pont de Nemours and Company, Wilmington, Del.

This is revealed with posthumous issue of two U. S. Patents, numbers 2,216,735 and 2,216,736, to Dr. Wallace Hume Carothers, who died in April, 1937. The original patents for the du Pont synthetic fiber, nylon, were issued to him also. The new patents, like the old ones, are assigned to the du Pont Company.

The patent specifications point out that nitrocellulose is now most widely used for films, despite its inflammability, and that cellulose acetate, which has replaced it in some cases, has the disadvantage of low resistance to water, and poor strength and flexibility, especially when very dry. Fairly thick films must be used to compensate for the lack of strength. In color photography, where the picture may be coated on both sides of the film, and separated by its thickness, this causes a blurring of the picture.

Dr. Carothers found two groups of chemical substances which offer many advantages over the old material. One consists of linear superpolymers, and is covered in the first patent, the other includes linear polyamides. Both of these are crystalline, that is, they have a sharp melting point, and do not, like resins, gradually soften as the temperature is raised. In preparing the film, the material may be melted, and spread on a smooth, cool metal surface, or rolled between cool metal rolls, where it freezes into a thin sheet.

These substances, it is said, have extreme strength, good flexibility and resistance to water, and are non-inflammable. On account of their strength, movie films made of them will last much longer when exposed to the wear of repeated passage through the projection machine. It is also possible to use films half as thick as ordinarily. This promises to be very useful in color photography. Layers can be coated on opposite sides of the film without causing a distorted image.

In other methods of color photography, several layers of emulsion are coated on a single film base. Using thin films of superpolymers or polyamides, each with its own emulsion, a three-deck sandwich or "tripack" can be built up, in which the total thickness is still surprisingly little, and the emulsions are very close together, it is stated.

As an example of the advantage over older kinds, it is said that cellulose acetate film can be bent about 25 times before breaking, at 70% relative humidity, and about 10 to 15 times in a perfectly dry atmosphere. In contrast, at either degree of humidity, film made of one of the polyamides was intact after 250 bendings.

"This indifference to atmospheric conditions means that films of the present invention need not be stored under carefully adjusted conditions as is done with cellulose acetate," say the patent specifications. "This unique property makes them specially advantageous as permanent business, library and historical records."

The advantages of the new film adapt them for cut or roll film, amateur or professional movies, microfilm recording of documents or publications, X-ray pictures, color photographs and sound recording, it is stated.

Science News Letter, October 26, 1940

PHYSIOLOGY

New Heated Diving Suit Has Glass Insulation

See Front Cover

WITH new electrically heated diving suits, insulated with glass cloth, U. S. Navy divers will be able to descend deeper into the sea, stay down longer, and still retain clear heads, than they could before. Announcement of the official adoption of the new suit was made at the time of a demonstration in the experimental diving tank at the Washington Navy Yard.

WARM

Chief Torpedoman J. W. Thompson, U.S.N., is tired but warm at the end of an experimental dive in new glass-insulated, electrically warmed underwear. The diving suit which he wears over the warmed underwear is just being removed.

Formerly, a diver was supplied with ordinary air, which consists of a mixture of oxygen and nitrogen. To overcome the pressure of many feet of water above, this has to be considerably compressed. Under these conditions, nitrogen dissolves in the blood and enters the tissues. If he then ascends too rapidly, and the pressure is reduced, the nitrogen comes out of the blood, and forms bubbles in the veins and arteries, causing intense pain. This is called the "bends."

By using in place of air a mixture of oxygen and helium, once rare gas now used for filling balloons and airships, the danger of the bends is greatly reduced, because of the lessened tendency of helium to dissolve in the blood and body tissues. Also, it was found, the divers could maintain mental clarity over a longer period and at greater depths with the helium mixture.

When it was first tried, however, Navy divers found that they were much more sensitive to cold than formerly, and this, of course, hampered their work. Then electrically heated suits, with normally insulated wires in the underwear worn by the diver, were tried. This re-

sulted in fire danger, for the insulation is highly inflammable with so much oxygen present.

Carrying out Navy suggestions, Paul Gayne, president of the Colvinex Company, of New York City, developed the new suits. These are insulated with fiberglas, which is cloth woven of thin glass fibers, and is non-inflammable. The wires are insulated with glass, and they are sewn with glass thread between two layers of fiberglas cloth in the diver's underwear.

The use of helium-oxygen was one of three important advances that resulted from studies initiated by the U. S. Navy after the submarine S-4 sank off Provincetown in 1927. The others were the Momsen "lung" and the McCann Rescue Bell, which saved the lives of 33 trapped men from the Squalus in 1939.

Science News Letter, October 26, 1940

PUBLIC HEALTH

To Protect Health of Army In Case It Goes to Tropics

Rockefeller Foundation in Cooperation with U. S. Health Service Preparing Much Yellow Fever Vaccine

OFFICERS and men of the U. S. Army will be protected by vaccination against yellow fever if they are sent to Central or South America on a hemisphere defense mission, Col. George C. Dunham, speaking for Surgeon General James C. Magee, U. S. Army, announced to the American Public Health Association.

To prepare for this potential need of the Army, enormous quantities of yellow fever vaccine are being prepared by the Rockefeller Foundation in cooperation with the U. S. Public Health Service. The vaccine, developed by Dr. Wilbur Sawyer and associates of the Rockefeller Foundation, has already been given to some two million persons in South America. Difficulties in preparing large quantities of the vaccine have so far limited its use largely to the protection of scientists, explorers and others especially exposed to the disease or to groups of civilians taking part in studies of the effectiveness of the vaccine.

Enough vaccine will be ready, it is expected, to protect the Army from the dreaded Yellow Jack which plagued U. S. troops during the Spanish-American war before Walter Reed and his associates discovered that the disease was spread by mosquitoes.

Protection of American soldiers by vaccination against cholera and diphtheria is also planned if war conditions make this necessary, in addition to the routine protection now given our troops against smallpox, typhoid fever and tetanus or lockjaw.

New vaccines for protection against pneumonia, typhus fever and influenza, plagues of the World War, are now being given field trials, Col. Dunham said, to find whether these protective measures can also be used for American soldiers in event of war.

Science News Letter, October 26, 1940

Prostitution a Fifth Column

GENERAL Charles R. Reynolds, recently retired Surgeon General of the U. S. Army, warned against prostitution as a "fifth column in our midst" which threatens the new national defense army that will start for training camps shortly after the peace-time draft next week.

Syphilis and gonorrhea will attack the men in training camps unless prostitution, both commercial and clandestine, is controlled, General Reynolds warned. A plan for such control was given by General Reynolds before a special session of the American Public Health Association.

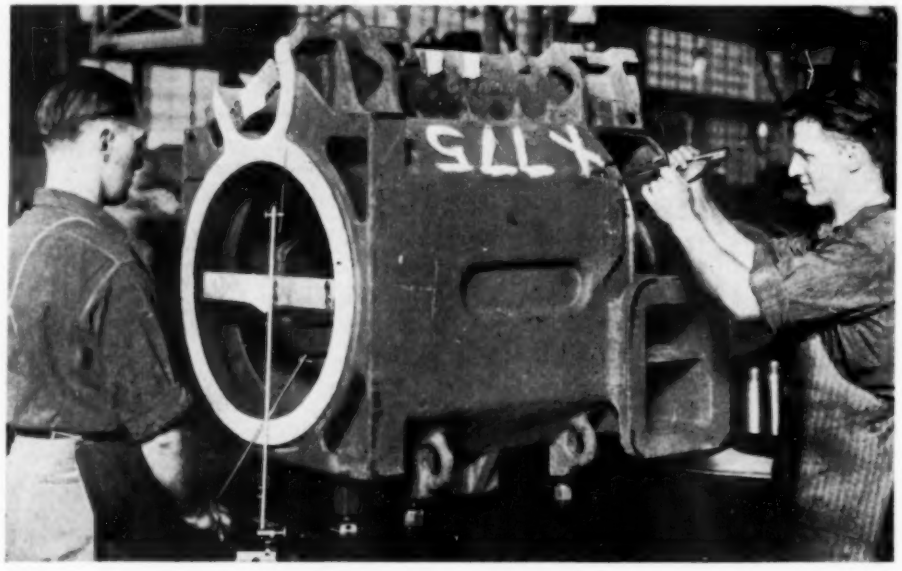
Outbreaks of syphilis and gonorrhea among the men on maneuvers near two southern cities last spring were immediate results of prostitution in those localities, General Reynolds reported. In one of the cities, among 85 prostitutes examined by health officers, one-third were found to have syphilis and one-half gonorrhea, and many had both.

Protection of the men against venereal diseases will be possible, he believes, because military and civil authorities will cooperate in this vital defense project and because of the "awakened public attitude toward this menace which provides an ally to the military forces which never before has been adequately mobilized."

Science News Letter, October 26, 1940

Petroleum engineers say that more than 99½% of the recoverable *oil* known in underground reservoirs can ultimately be recovered.

A zoologist at the American Museum of Natural History who recently was asked to examine George Washington's *dental plate* reported that an elk or wapiti had contributed the teeth.



IN QUANTITY PRODUCTION

Casting for a motor frame to be used on one of the Diesel-electric locomotives is marked for machining.

SHINING THEM UP

Pistons for 2,000 horse-power Diesel-electric locomotive units on the production line, being polished prior to being fitted with piston rings and being placed on the engine.

ENGINEERING

Diesel-Electric Motors Are Built on An Assembly Line

Powerful Locomotive Engines Similar to Those in Submarines Expected to Speed Defense Program

WORK on the largest order for Diesel-electric passenger locomotives ever placed began in La Grange, Ill., on a 24-hour basis when employees of the Electro-Motive Corporation started production-line operations on the 18 2,000-h.p. units ordered by the Atlantic Coast Line Railroad.

America's industrial preparedness will be speeded greatly by powerful locomotives of this type, say railroad officials, who point out that war requirements tax transportation facilities to the limit.

The locomotives are powered by motors similar to those now used in Uncle Sam's latest submarines. But it is only since 1935 that motors of this type have been used in passenger locomotives. They are the most compact, powerful, and economical engines ever devised by man for these purposes. Capable of 600-mile runs without refueling, the locomotives can make the 1,160-mile trip between Washington and Miami without change. They embody all the latest developments of Electro-Motive and General Electric engineers for fast, luxurious transportation with safey and comfort.

Due to the greater inherent ability of Diesel locomotives to accelerate and decelerate quickly, and the fact that they do not have to be stopped for servicing as often as steam locomotives, they are expected to shorten the running time between New York and Florida.

The power in each unit is supplied by two 1,000 h.p. V-type, 12-cylinder Diesel motors. The locomotives are equipped with electric transmission. This consists of a 600-volt direct-current generator, coupled to the front end of each of the Diesel motors, from which the current is delivered by cables to 4 traction motors mounted on the trucks, two in each truck. The traction motors are geared directly to the driving axles. Power reaches the rail at 8 wheel points.

Controls of the new locomotives are as simple as those of an automobile despite the enormous power and weight at the command of the engineer. Astonishingly enough, the actual manual effort exerted to start and stop a Diesel locomotive is less than is used in driving an automobile. An illuminated annunciator box on the control panel flashes the operator by red, green, and orange lights should a "hot engine," "low oil pressure" or a "heating boiler" develop.

Science News Letter, October 26, 1940

PHYSIOLOGY

Cats Have One Blood Type Instead of Four As in Man

BLOOD transfusion problems in cats are greatly simplified by the apparent fact that cats have only one blood type, J. L. Rowland and Glenn McElory of Central College have discovered. In their experiments, they even mixed blood samples taken from seven different cats, and when a part of this mixture was introduced into the veins of another cat no ill effects followed.

Transfusions are not often called for in veterinary practice, but if a sick cat is so valuable as to make it worth while, there would appear to be no need for the troublesome and time-consuming job of "typing," necessary in human medicine because of the four human blood types, which get into physiological quarrels if they are mixed, with distressing or even fatal results to the patient. Among cats, any other cat can be the blood donor, with no fear of consequences.

The two physiologists did have some trouble in their first transfusions, because the cats receiving other cat blood showed signs of shock. However, this was readily taken care of by mixing a little glucose solution with the donated blood.

The thing that makes trouble when bloods of alien types are mixed is the phenomenon known as agglutination. Something in the blood serum causes the blood corpuscles to stick together in clumps.

Messrs. Rowland and McElory discovered the curious fact that whereas cat blood serum will not cause agglutination of human corpuscles, human serum will produce the clumping effect on the corpuscles in cats' blood. They also found that the specific gravity of cat and human blood is almost identical.

Science News Letter, October 26, 1940

A new high-speed printing press will print books entirely from *rubber* plates.

ASTRONOMY

Still Another New Comet Discovered in Japan

DESPITE the German occupation of Denmark, the International Bureau of Astronomical Telegrams, at the Copenhagen Observatory, which is the world's clearing house for news of discoveries, seems still to be functioning. This is indicated by a radiogram recently received in the United States by the Harvard College Observatory, announcing the discovery in Japan of a new comet. It is signed with the name of Dr. E. Stroemgren, who has directed the Bureau for a number of years.

News of the discovery was transmitted to Denmark by Dr. Hidewo Hirose, director of the Tokyo Observatory. The comet was discovered by a member of his staff, S. Okabayasi, who discovered a new star in Sagittarius in 1936.

Okabayasi's comet is the fifth of the year, and the fourth to be found since Sept. 1. Of eleventh magnitude, it is too faint to be visible except with a telescope of at least moderate size. It was described as being diffuse, but with a central nucleus and was found on Oct. 4. However, it has already made its closest approach to the sun, and is now getting fainter as it recedes from the center of the solar system. Thus there is no hope of its being visible to the naked eye, since at the time of discovery it was of magnitude 11, too faint to be seen without a telescope.

Calculation of its path has been made by Elizabeth L. Scott, at the University of California in Berkeley, it was announced by Dr. Harlow Shapley, director of the Harvard College Observatory. This shows that on Aug. 11 the comet was nearest the sun, at a distance of about 90 million miles, slighty less than the average distance of the earth.

A prediction based on this calculation shows that it will move into the constellation of the Great Bear early in November, passing alongside the pointers in the Great Dipper. It is heading almost directly north from its discovery position in Leo, the lion.

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Double Claim for Harvard

HARVARD University has a double claim to the new comet which Dr. Fred L. Whipple, of its observatory at Oak Ridge, discovered recently. (See *SNL*, Oct. 12) According to Dr. Harlow Shapley, director of the Observatory, it was found independently by Dr. John S. Paraskevopoulos, Greek-born astronomer who has charge of Harvard's southern observatory at Harvard Kopje, South Africa. If astronomical usage is followed, the comet (which is really a rather insignificant one) will carry the complicated name of "Whipple-Paraskevopoulos Comet."

Word has also been received from the Argentine National Observatory at Cordoba that it was observed there on Oct. 4 in the constellation of the Chameleon, a small group near the south pole of the sky. It appeared as a diffuse object of the eleventh magnitude.

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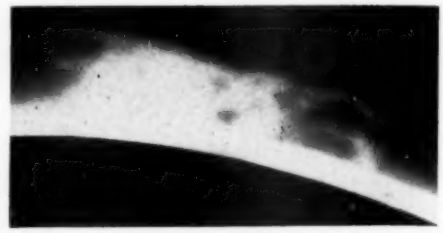
ASTRONOMY

Flames on Sun Made Visible With Telescope Attachment

GREAT flame-like masses of gas, which sometimes shoot out from the surface of the sun to a height of a million miles, have been under scrutiny of astronomers at the Harvard College Observatory with a new instrument.

Until now the most useful device for showing these prominences, which may be visible to the naked eye when the sun is totally eclipsed, is the spectro-heliscope, a fairly complicated device with a number of optical parts and a set of prisms rotated by a motor.

The new device, less than two feet in length, has been used as an attachment to one of the observatory's smaller telescopes. It was constructed by John W. Evans, of the Chabot Observatory, Oakland, Calif., who loaned it to the Harvard College Observatory.



PROMINENCES

This flame-like mass of hydrogen shooting out from the surface of the sun, was photographed with the Evans monochromator at Harvard College Observatory.

The reason prominences cannot be seen ordinarily is because of the great glare of the atmosphere around the sun. The glare consists of white light, made up of all colors, while the light of the prominence is mainly one color, that of glowing hydrogen. Thus, to the eye, sensitive to all colors, the illumination from the sky drowns out the prominence.

However, if some way can be found to pick up just the wavelength of hydrogen light, the prominence can be seen, for, with other wavelengths excluded, it is much more brilliant than the sky.

This has been done with the spectroscope, but Mr. Evans used what is called a "quartz monochromator." This consists of a series of six crystals of quartz, each half the thickness of the preceding one. Between them are sandwiched layers of film which polarizes light, making it vibrate in one plane instead of many.

The spectrum of colors, which would be obtained by analyzing through a prism the light from the first quartz plate, would show a series of broad alternate bands of light and dark. Each successive plate widens the dark bands and squeezes the bright ones, until, after enough have been used, one of the bright bands is just wide enough to pass the hydrogen light. Colored filters cut out the others.

First suggested by a French astronomer, Dr. Bernard Lyot, the device was tried in Sweden by Dr. Yngve Ohman. However, he was not able to use as many quartz plates since he did not have the polarizing film available. Instead, he employed another method for obtaining polarized light, the Nicol prism. With one of these between each pair of quartz plates, the instrument was quite long.

Mr. Evans has also used the monochromator for photography, by the simple expedient of holding a camera at the eyepiece. For other than such experimental photographs, a more stable support would be used.

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MEDICINE

Many Cases Diagnosed "Flu" May Actually Be Q Fever

First Proved Epidemic of Australian Disease in U. S. Attacked Physicians of National Institute of Health

SOME persons in the United States who have had an attack of what appeared to be influenza or of a new and mysterious form of pneumonia may really have been infected with the rickettsia of Q fever, first described in Australia in 1937.

This possibility appears in an announcement in *Public Health Reports* (Oct. 25), by the National Institute of Health of the U. S. Public Health Service, of the first proved epidemic in the United States of Q fever.

The epidemic attacked 15 members of the staff of the National Institute of Health, one of whom died. The only other proved case of Q fever ever reported in the United States was an accidental laboratory infection picked up during investigations of a new kind of germ found in ticks at the Hamilton, Mont., Rocky Mountain Spotted Fever Laboratory of the U. S. Public Health Service. The germ was found on investigation to be the rickettsia which causes Q fever in Australia.

This same germ was the cause of the epidemic at the National Institute of Health this year. The National Institute report does not say, because it has not yet been proved, that this rickettsia is also the germ that has been causing cases of a new, atypical pneumonia that has appeared in the United States within the past few years. These pneumonia patients, however, had symptoms similar to those of the Q fever patients. Examination after death showed apparently identical changes as have been reported in the lungs at post mortem examination of the atypical pneumonia victims.

No germ has yet been identified as cause of these atypical pneumonia cases. A filtrable virus has been suspected but not yet proved to be the cause. The Q fever rickettsia is a filtrable germ that might be mistaken for a filtrable virus without careful tests.

Q fever and the atypical pneumonia are both mild ailments, not often fatal, and without X-ray examination of the patient's chest, either disease might readily be called influenza, rather than pneumonia. Neither, of course, is the same as influenza A, which is caused by a known virus.

Patients with Q fever with an atypical pneumonia have fever, rarely any chills, frequently profuse sweating. They feel ill and exhausted but do not have the breathing difficulty of typical pneumonia nor as severe body aches and pains as influenza.

"A comparison of the clinical features and physical findings in these cases," the National Institute's report of its Q fever epidemic concludes, "with various series reported from other sections of the United States in the past few years reveals suggestive similarities."

Q fever germs are kept at the National Institute of Health, but none of the persons handling these germs became ill. The 15 patients in the epidemic were working in scattered places throughout the building with no known contact with these germs. There is the possibility that they may have picked up the germs of Q fever outside the laboratory, which would make it more likely that there have been unrecognized cases of Q fever in the United States.

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PUBLIC HEALTH

Communities Near Army Camps Will Have Extra Health Burdens

HEALTH protection of persons living near the new Army training camps will have to be given by state and local health authorities without federal financial assistance to meet the extra load of work, Assistant Surgeon General Warren F. Draper, U. S. Public Health Service, told members of the International Society of Medical Health Officers meeting in Detroit.

Congress has just refused to make an appropriation to the Public Health Service at this time which would enable the service to aid local resources because within the last four years considerable grants-in-aid have been made through the Public Health Service to the states to increase local health services. These grants have amounted to $11,000,000 annually plus $6,000,000 annually for venereal disease control.

Population around the peacetime training camps will suddenly increase by one-third, one-half or even be doubled, if World War training camp experience is repeated. The population increase will include construction workers and their families, job-hunters, families of the trainees, and a miscellaneous hodgepodge of camp followers. Hotels, boarding houses, restaurants, ice cream parlors and bottling establishments will be overtaxed and cleanliness and sanitation are likely to suffer. In addition, the military forces may have to depend on local water supplies and sewage disposal facilities.

Unless this extra strain on local health protection resources is foreseen and provided for, disease is likely to break out around the encampment areas. Although Dr. Draper did not enumerate specific diseases, health officers listening to him knew that typhoid fever, dysentery, trench mouth, colds, influenza and pneumonia are among the health dangers that threaten unless proper sanitary and health measures can be taken.

To assist in this task, Dr. Draper said, the U. S. Public Health Service can send to encampment areas trained advisers or consultants. These men will have the confidence of the military authorities and so can act effectively as liaison workers between military and civil health authorities.

Only by working their present staffs 18 hours a day or more will health departments be able to take care of the extra strain without sacrificing other vital health services, Dr. Arthur McCormack, Kentucky state health commissioner, commented.

Even if health departments could get money to finance the extra work the training camps will bring, they would not be able to get trained workers immediately, he pointed out.

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A Pennsylvania State College professor who says, "You're never too old to learn," began the study of *calculus* when 50 years old and now at 59 is studying hyper-space geometry.

BOTANY

"Escaped" Botany Journal To be Published in U. S.

CHRONICA BOTANICA, a European botanical magazine, first of its kind to "escape" from war-swept Europe and transplant itself to American soil, has issued its initial American number at Waltham, Mass. It was first published in the Netherlands as a year book, later as a bimonthly. To keep in step with American tempo, it will be issued here every two weeks.

A particular point is made, in the announcement of the opening of American publication, of the role which botany and botanists will be called upon to play in postwar reconstruction:

"Plant scientists know more than anyone else about our natural resources and raw products. They will have to play a most important part in the reconstruction after this war. It is of fundamental importance that good international relations are kept up and developed among this group of workers as far as the present international circumstances permit."

The editor, Dr. Frans Verdoorn, is a young botanist born in the Netherlands, who has had experience in the tropics as well as in Europe and this country. Master of several languages, he expects to maintain the international character of his journal by publishing articles not only in English but in Spanish, French, German and Italian.

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MEDICINE

Viruses Are Enemies Of All Animal Life

IT IS getting to be common knowledge that infantile paralysis, that much-dreaded and often crippling ailment, is caused by a kind of germ called a virus. Most of us, however, are a little hazy as to what a virus actually is. Scientists themselves, although knowing much about the viruses, are still uncertain about their true nature. Viruses seem in some ways to be alive. But some viruses isolated from sick plants turned out to be non-living chemicals, or rather, chemicals having all the properties of viruses have been obtained from plants sick with virus-caused disease. More than one scientist now look on viruses as belonging to a transition stage between the living and the non-living.

Whatever they may be, viruses are enemies of all life. Not only man, but animals and birds, fish, insects, plants and bacteria themselves are destroyed by these unseen but active enemies.

How the viruses attack, and how scientists for hundreds of years have courageously fought this attack in spite of discouragement and repeated rebuffs is told in a new book, *The Virus, Life's Enemy,* by Kenneth M. Smith.

Among the human diseases caused by viruses are smallpox and yellow fever, infantile paralysis, measles, mumps, chicken pox, epidemic influenza, and trench fever. Against two, perhaps three of these man can now protect himself. Successful vaccination against smallpox was achieved in the eighteenth century by the English physician, Edward Jenner. Within the last 10 years vaccination against yellow fever has been accomplished, and this very year comes an encouraging report of a new vaccine against measles.

Those who are impatient that more has not been accomplished in this war against an unseen and deadly enemy will find the reasons in Dr. Smith's book.

Science News Letter, October 26, 1940

FISHERIES

Worm Forces Oysters To Take It In As Tenant

PEARL-COATED lumps of mud inside oyster shells are cutting down the value of oysters along the South Atlantic coast. These "mud blisters" are caused by a small marine worm, known as *Polydora ciliata,* that sneaks into the oyster's house and becomes an uninvited but permanent tenant, reports G. Rovert Lunz, Jr., of the Charleston Museum. (*Science,* Oct. 4)

When the worm moves in and makes a muddy spot, the oyster responds by covering up the intrusion with nacre, or mother-of-pearl — its usual reaction to invasions or irritations of any kind. The worm lives on in the mud blister, maintaining connection with the outside world through two tunnels opening along the edge of the shell. It does not become a parasite on the oyster, except to the extent of stealing houseroom.

Mud blisters in their shells do not make the oysters inedible, Mr. Lunz states, but they do render them unsightly and thereby unsaleable. Since many beds in southern waters sometimes have as high as 30% of their shells thus disfigured, the worm must obviously be counted a major pest; the more so since it seems to be on the increase.

Mr. Lunz is at present trying to find out why this increase is occurring, and becoming a threat to the oyster industry in the South.

Science News Letter, October 26, 1940

IN SCIENCE

ZOOLOGY

Animal As Well As Human Life In Hungary May Suffer

WILDLIFE as well as human life is expected to suffer, as Nazis invade Hungary. Game populations were seriously reduced by the unprecedentedly severe winter last year, so that heavy hunting for meat, plus poaching which will undoubtedly result from peasant distress, will probably imperil the very existence of some species.

Most seriously endangered are Hungary's famous herds of wild boar, which were already in precarious state from the icy decimation of last winter. About half of all the Hungarian pheasants, as well as hundreds of thousands of partridge and hare, also perished during the terrible months of cold and snow. If another severe winter comes, the combination of human hunger and inhuman weather may well prove too much for Hungary's hard-pushed game.

Science News Letter, October 26, 1940

PHYSICS

Protein Molecules Seen With Electron Microscope

TWO kinds of organic molecules have been rendered visible by the electron microscope in Germany, according to information reaching Dr. Stuart Mudd, of the University of Pennsylvania's Medical School department of bacteriology. Dr. Mudd is chairman of the National Research Council's committee on the electron microscope. (See *SNL,* Oct. 12)

The organic substances the molecules of which have been made visible are hemocyanin and edestin. Both are proteins. Hemocyanin or hematocyanin is a blue respiratory pigment in the blood of mollusks and arthropods. Edestin is a pure crystalline protein obtained from oil of castor beans, hemp seed and other seeds.

A beginning has also been made in Germany toward the elaboration of special techniques of "staining" and of adsorption of metallic sols on protein molecules.

Science News Letter, October 26, 1940

NE FIELDS

PUBLIC HEALTH

Don't Rush Hardening Up Is Advice of Physicians

EPIDEMICS such as those that swept American army camps in 1917-18 can be largely obviated if we "make haste slowly" this time, mobilizing trainees gradually and in small groups and not trying to rush the process of physical hardening. This recommendation is offered editorially by the *Journal of the American Medical Association*, (Oct. 12)

Dr. Hans Zinsser, eminent Harvard bacteriologist who died only a few weeks ago, is cited by the *Journal* as authority for the opinion that the epidemics in the World War camps were due largely to the crowding together of large numbers of young men, some of whom were carriers of respiratory diseases, and to the efforts of the officers to harden their recruits up into real soldiers by too strenuous exercise and too prolonged drill.

Science News Letter, October 26, 1940

FORESTRY

Russian Method of Pruning To Produce 20-Foot Boards

PRUNING young pines and other evergreen trees by a new "upside-down" method originated in Russia is expected to produce logs 20 or more feet in length yielding boards without knots. The new pruning method was originated by P. G. Krotkevich of the Kiev Forest Institute, and will be explained for the benefit of English-reading foresters by Benson H. Paul of the U. S. Forest Products Laboratory and S. A. Wilde of the University of Wisconsin, in the *Journal of Forestry*. (October.)

In the conventional pruning method, young trees are permitted to reach a certain height with relatively little attention. Then bottom branches are cut off, leaving a bunchy little top to develop to full size as the tree grows. This, however, leaves the bases of the young branches embedded in the heart of the tree, to become knots when the trunk is finally sawed into boards.

In the Krotkevich method, the young tree is permitted to develop a bushy growth near the ground, until it is about eight years old. After this, its central growth axis, or leader, is prevented from producing any more branches above this ground-hugging bush, simply by pinching off all side buds. The leader thus grows into a long, slender, pole-like sprout, deriving its nourishment from the bushy branches near the ground. Only after it has reached a height that will yield a log 18 or 20 feet long is it permitted to branch out and form a normal top. Growing in this way, it has no branch-bases embedded at the center, and hence will produce wholly knotless lumber.

The American commentators on the method feel that it is worth a trial in this country.

Science News Letter, October 26, 1940

ASTRONOMY

Harvard Eclipse Expedition Only Successful Americans

SATISFACTORY observations of the total eclipse of the sun on Oct. 1 were made by the expedition to Queenstown, South Africa, from the Cruft Laboratory of Harvard University. This is reported in a cablegram received at Cambridge.

Though the party was mainly interested in radio studies, which did not depend on clear weather, it was planned to take photographs also, and, presumably, these were made. Two other American expeditions, to South America, were subjected to cloudy weather during the few minutes that the sun was covered, preventing such photographs.

Science News Letter, October 26, 1940

MILITARY SCIENCE

Door Bell Gives Swedish Their Air Raid Warning

IF SWEDEN should become a belligerent, its citizens may receive warning of air raids by a bell ringing in their homes. Such bells, announcing most unwelcome callers, are used in a new system which has been approved by the authorities, and is now being widely installed.

The bells are connected by electrical couplings to the regular lighting mains, but ordinarily do not operate. When, at the central station, the voltage is raised slightly, not enough to damage any equipment, all the bells are made to ring for one minute.

Science News Letter, October 26, 1940

PHYSIOLOGY

Quick Test For Pregnancy Declared 95% Accurate

TRIAL of a new 24-hour pregnancy test on 500 Washington women who were expecting blessed events showed that the test is 95% accurate as well as being as quick a test as any now known, Dr. Richard E. Kelso, of George Washington University Medical School, announced to the Medical Society of the District of Columbia.

The test, originated by Dr. Kelso while he was a medical student, is made upon immature rats. These animals are given three injections, about one-quarter of a teaspoon at a time, of the kidney excretion of the woman who thinks she may be going to have a baby. The three injections are made at four-hour intervals. Twelve hours later the doctor can tell by examination of the rat's ovaries whether or not the woman may expect a blessed event nine months later.

The test is similar to the Ascheim-Zondek test for pregnancy which is made on either rabbits or mice, but the new Kelso test gives the verdict more quickly.

Toads, Japanese bitterlings, and the woman herself have been used in other pregnancy tests.

The female bitterling sends out what has been called a flag of motherhood under the influence of a hormone which is present in increased amounts in the blood and kidney excretions of pregnant women. It is this same hormone which causes the changes in the rat's ovaries that form the basis of Dr. Kelso's test, and also of the tests on mice, rabbits or toads.

The toad test, reported from the University of Cape Town, South Africa, is said to take only 18 hours for a verdict.

The hormone itself is injected under the skin of the forearm of the expectant mother in a test devised by Dr. G. C. Gilfillen and Dr. W. K. Gregg of Dayton, Ohio. A red, inflamed spot on the arm gives a verdict of no baby, according to this test.

Science News Letter, October 26, 1940

INVENTION

New Pen Flashlight Lights Around Corners

A BEAM-BENDING pen light that sends illumination around corners is now supplied by a radio company as a standard part of the equipment for service men. (*Philco*)

Science News Letter, October 26, 1940

ASTRONOMY

Moon Joins Planets

Jupiter and Saturn, Still Brilliant in Southern Sky Will Have Nearly Full Moon Pass Between Them

By JAMES STOKLEY

WITH the planets Jupiter and Saturn still forming a brilliant pair in the southern evening sky, their attractiveness will be enhanced on the evening of Nov. 13, when the moon, nearly full, passes between them. It comes within a tenth of a moon diameter of Saturn. The two planets, at other times, can be easily recognized, because Jupiter is the brighter of the pair.

They are in the constellation of Aries, the ram, in which Hamal is the most brilliant star, but not of the first magnitude. However, eight members of this class of brightest stars are now in view, and are indicated on the maps. These, by the way, show the appearance of the heavens at 10:00 p. m. on Nov. 1, 9:00 o'clock on the 15th and 8:00 o'clock on the 30th.

These first magnitude stars are in two groups. To the west is Deneb, at the top of the northern cross, which is in the figure of Cygnus, the swan. Nearby, to the right of the foot of the cross, is Vega, still more brilliant, in Lyra, the harp. Altair, part of Aquila, the eagle, is to the left.

The other five appear to the east. Around to the north is Capella, in Auriga, the charioteer. A little lower, directly east, stands Aldebaran, in Taurus, the bull. Beneath him is Orion, the warrior. This is identified by the three stars in a vertical row, forming his belt. The bright star to the right of the belt is Rigel, that to the left is Betelgeuse.

The last of our bright stars shown is Pollux, in Gemini, the twins, which is near the horizon, directly below Auriga. Pollux is the lower of the two stars. It will be noted on the map that its symbol is that of the third magnitude. This is done because, when it is so low, the absorption of the atmosphere that its light has to penetrate makes it look much fainter than it does when higher in the sky.

The most important astronomical event of November is a transit of the planet Mercury across the face of the sun on Armistice Day. The last time this happened was in 1937, when the planet just skimmed along the edge of the sun's disk, half on, half off, but even this was not visible here. Before that, there was one in 1927, but this was not visible in the United States or Canada either. The last time we could see one was in 1924.

At 3:49 p. m., Eastern Standard Time, the planet starts to enter upon the disk of the sun, at its eastern edge. Two minutes later it is entirely on the disk, and about five hours elapse before it completes the transit. By that time, in all of North America except the extreme northwestern part, the sun will have set. Over the Pacific Ocean area, the transit will be available in its entirety.

Because Mercury is so much smaller than the sun, appearing to be about one two-hundredth its diameter, this will not be visible to the naked eye. A telescope with the protective attachments that are used for observing sunspots will easily show it, however. The magnifying power should be about a hundred.

One good way of making such observations is to mount the telescope pointing to the sun, and to use it as a projector, throwing an image of the sun on a piece of white cardboard, held about a foot or more away from the telescope eyepiece. A large cardboard collar may be placed around the eyepiece so as to shade the image card from direct sunlight. Focusing the telescope will make the image sharp. If one looks at the sun through the instrument, a special eyepiece, to reduce the brilliance, should be employed, otherwise serious injury to the eye is likely to result.

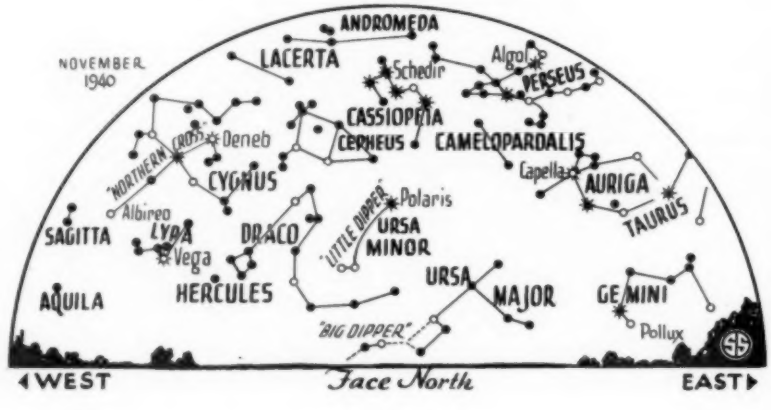
The importance of this transit is stated as follows by Captain J. F. Hellweg, superintendent of the U. S. Naval Observatory in Washington:

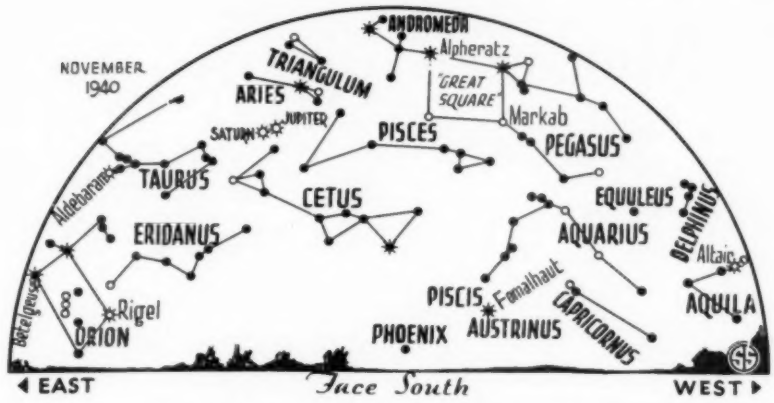
"It is now well established that the rotation of the earth on its axis is not uniform, but varies in an irregular manner which cannot be predicted in advance. That is, our standard of time, which is the period of rotation of the earth, must be checked frequently against the motions of other bodies so that we can correct for its error and obtain a more uniform system of this measurement. One of the most valuable checks is furnished by observations of transit of Mercury. Such observations also furnish information with regard to the motion of Mercury itself.

"Transits of Mercury occur but seldom; there will be only nine during the remainder of the present century. Of these nine, four will be of very little value by reason of their short duration. The transit of 1940 will be more favorable than any other yet to occur in this century, except that of 1973, which will be very little better.

"Observations of the transit are uncertain by amounts approaching half a minute of time, principally because of atmospheric conditions on the earth. The uncertainty can be reduced sufficiently only by obtaining great numbers of observations, and averaging the results. For this reason, the U. S. Naval Observatory desires cooperation from both amateur and professional astronomers in observing the transit of Nov. 11."

The observations consist mainly in determining, as accurately as possible, the exact time that the planet enters the solar disk. The Naval Observatory has prepared a special set of instructions for





amateur observers, and these will be sent upon request and without charge to anyone who is interested.

Celestial Time Table for November

Saturday, Nov. 2, 11:00 p.m., Jupiter opposite from sun and nearest earth; 369,900,000 miles distant. **Sunday, Nov. 3,** 4:00 p.m., Saturn opposite from sun and nearest earth; 763,400,000 miles distant. **Wednesday, Nov. 6,** 4:08 p.m., Moon in first quarter **Monday, Nov. 11,** 11:00 a.m., Moon farthest from earth; 252,300 miles distant; 3:49 p.m., Transit of Mercury across sun begins. **Wednesday, Nov. 13,** 5:56 p.m., Moon passes Jupiter; 9:20 p.m., Moon passes Saturn. **Thursday, Nov. 14,** 9:23 p.m., Full moon. **Saturday, Nov. 16,** Maximum of shooting stars on Leonid shower — bright moonlight will interfere considerably with their view; 10:00 a.m., Uranus opposite from sun and nearest earth; 1,725,000,000 miles distant. **Friday, Nov. 22,** 11:36 a.m., Moon in last quarter. **Tuesday, Nov. 26,** 4:32 p.m., Moon passes Venus, which is visible in morning sky; 9:45 p.m., Moon passes Mars. **Wednesday, Nov. 27,** 7:00 a.m., Moon nearest earth, 224,900 miles distant. **Thursday, Nov. 28,** 5:00 p.m., Mercury farthest west of sun, visible around this date as morning star. **Friday, Nov. 29,** 3:42 a.m., New moon.

Eastern standard time throughout.

Science News Letter, October 26, 1940

RADIO

E. K. Jett, chief engineer of the Federal Communications Commission will discuss "Radio Interference Problems" as guest scientist on "Adventures in Science" with Watson Davis, director of Science Service, over the coast to coast network of the Columbia Broadcasting System, Thursday, Oct. 31, 3:45 p.m. EST, 2:45 CST, 1:45 MST, 12:45 PST.

Listen in on your local station. Listen in each Thursday.

PUBLIC HEALTH

In Defense Work Don't Overdraw Your Rest Account

Longer Hours Beyond Reasonable Day May Actually Decrease Output; White Collar Workers Also Affected

WITH DEFENSE preparations being speeded there is danger that many of us will work too long and get over-tired this winter. The result will be bad both for health and for defense. The Industrial Health Research Board of the Medical Research Council in England has just issued a summary of their findings on this subject which should be as valuable for American defense efforts as for English war efforts.

"One of the lessons learned in the last war," the Board points out, "was that excessive hours of work do not ultimately pay—even when considered solely on the basis of output and apart from the effect on the health of the workers."

Within certain limits, increasing the hours of work will increase the output. More can be done in six hours than in four or five. But a 12-hour day, it was found, produced no more than a 10-hour day. When the actual weekly working hours of a group of men were reduced from 58.2 to 51.2, the total output increased by 22%.

The value of the lesson on hours of work is not confined to men and women in factories. The white collar workers and executives, under the stimulus of defense preparations, are perhaps even more likely to try to accomplish more by working longer hours, regardless of how tired they may feel. And housewives adding knitting and sewing for war refugees or orphans to their other duties also may be overworking.

If the day's work has been reasonable, a night's rest should restore one's energy. But if fatigue is prolonged for a time, even a limitation of the hours of work does not result in a normal output for a number of weeks.

"It is," explains the Board, "as if a person who normally lived on income from a certain capital required extra money for an immediate purpose. He could draw on his capital, but later he would have less capital and therefore less income."

The lesson for all of us is not to overdraw on our reserve of energy or what might be called our rest account. Taking time for eight hours of sleep plus some recreation every day will keep us healthier and more efficient for our defense.

Science News Letter, October 26, 1940

Recent investigations show that there may be *tin* deposits in part of the Brazilian province of Bahia.

MEDICINE

Lungs Dusted with Aluminum Treatment for Dread Silicosis

First Clinical Trials Are Hopeful But At Least A Year Will Be Required for Conclusive Results

HOPEFUL news of the first clinical trials of a new treatment for silicosis, widespread health hazard to miners and workers in certain dusty trades, was brought by Dr. D. Irwin, of the University of Toronto, to the American Public Health Association meeting in Detroit.

For the past six weeks some seven or eight men, maybe more by now, have been having their lungs dusted daily with aluminum powder in the hope of checking further ravages of their lungs by the silica dust they have been breathing while at work. The treatment is being given by Dr. D. Crombie, superintendent of the Queen Alexandria Sanitarium in London, and Dr. J. Blaisdell.

At least a year will be required before the results of the treatment can be determined, but the signs so far are "far from discouraging," Dr. Irwin said.

The men inhale the aluminum dust through a tube held in the mouth, exhaling through the nose. The treatments start with a two-minute daily inhalation and work up to a thirty-minute inhalation every day. The men are continuing with their work while under treatment.

Tests of lung function, developed by Prof. W. S. McCann of the University of Rochester, were made before the start of treatment and will be made at intervals during the trial year of the treatment. It is hoped that these, as well as the way the men feel, will show any beneficial effects of the treatment.

The aluminum acts to check silicosis by coating the silica particles that are doing the damage in the lungs. This keeps the silica from dissolving and acting chemically to damage the lung. Studies by a number of scientists previously showed that it was not the sharp dust particles that damaged lungs but some chemical reaction between free silica and the lung tissue.

Following this lead, Dr. Irwin and associates first tried the effect of aluminum in reducing the solubility and chemical reactivity of silica. Finding that aluminum could check both these actions, they tried aluminum dusting the lungs of laboratory animals with silicosis. The results showed that while lung damage was not changed, the potentially dangerous quartz in dust cells can be inactivated to a form in which the lungs can get rid of it. Success with treating the animals led to the trials now going on in the aluminum treatment of human silicosis sufferers.

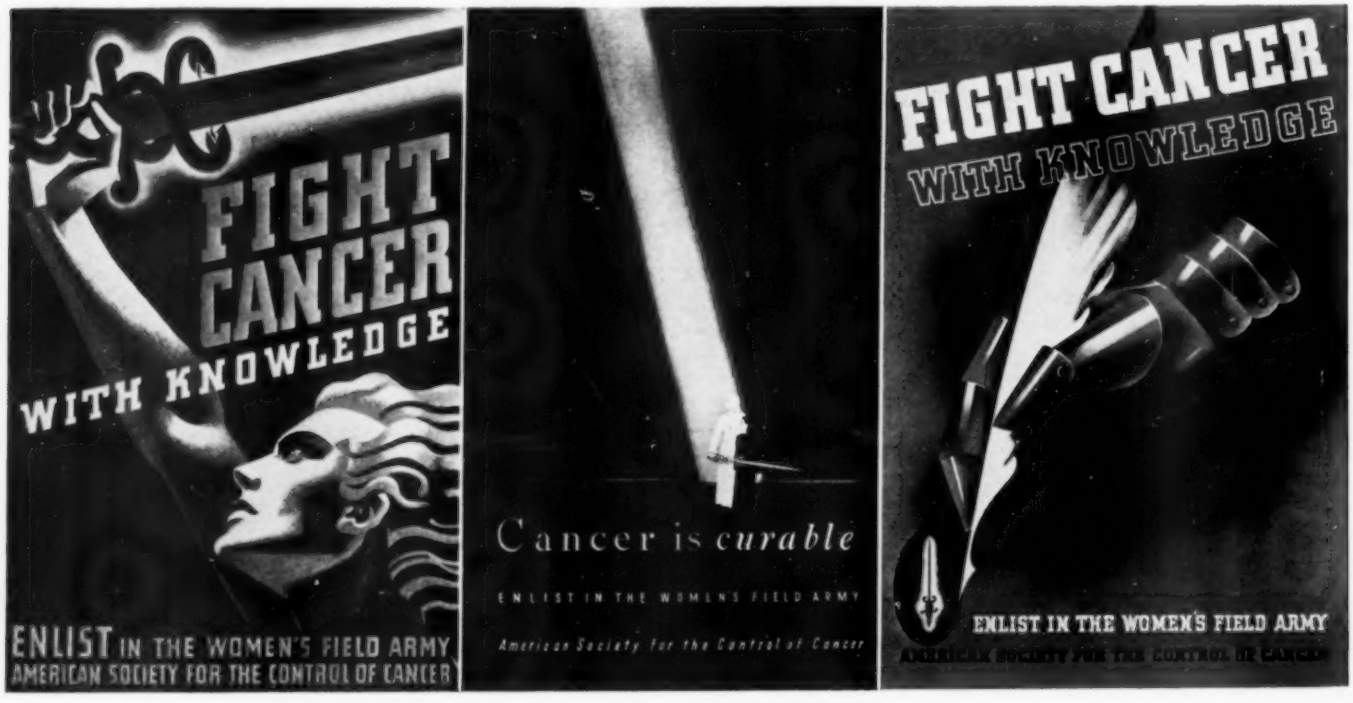
"If our prognostication is correct, the usual inexorable progress of the disease will be arrested and functional impairment diminished," Dr. Irwin said.

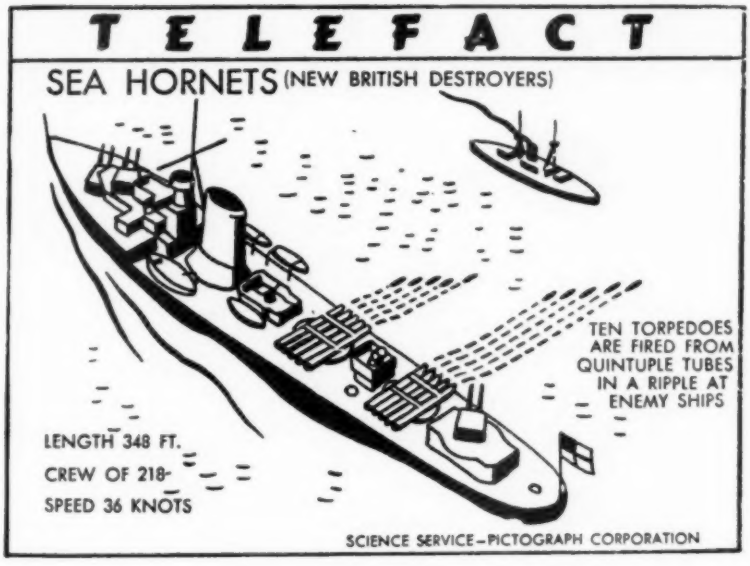
Before treating human patients, one hundred men who had been exposed to aluminum dust in the course of their work for at least twenty-five years were carefully studied. These showed no sign of damage from the aluminum dust.

Preventing silicosis by aluminum dusting the lungs of men working in mines and other dusty trades has not yet been tried. The ideal way to prevent silicosis is to prevent the inhalation of silica dust by proper ventilation and other measures

WINNERS

These posters won the first three prizes in a nation-wide contest conducted by the National Alliance of Art and Industry for the American Society for the Control of Cancer. The $1,000 first prize for the poster on the left was won by Henry Koerner, 24-year-old Viennese refugee artist now in Brooklyn. Second prize (center) was won by J. T. Ross, Pittsburgh. Herbert R. Loges, New York, won third prize.





in the work places. The aluminum dusting method has been patented, and if it proves practical for both treatment and prevention, Dr. Irwin said, license to use it will be given only to plants that are up to standard on ventilation and other dust control measures.

Science News Letter, October 26, 1940

MEDICINE

Hope To Discover Treatment For Chronic Sleeping Sickness

HOPE that a specific treatment for chronic sleeping sickness (encephalitis) will eventually be discovered appears in a report to the American Medical Association of studies of the brain of a modern sleeping beauty, Patricia Maguire, of Oak Park, Ill.

The girl, who fought a five-year losing fight against this ailment, attracting nation-wide attention before her death three years ago, may thus some day be included in the group of medical martyrs whose sufferings contributed to better methods of disease-fighting.

The origin of pathologic, as opposed to normal, sleep seems also to be clarified by studies of the brain of this victim of such a sleep disorder.

Post-mortem study of her brain, Dr. Richard B. Richter and Dr. Eugene F. Traut, of Chicago, report, revealed conditions which the doctors believe could only be caused by a chronic infection, and not as the result of a progressive process of brain tissue change set off by an original acute infection.

The latter view of chronic encephalitis as a progressive process following acute infection has gained increasing support in recent years. The Chicago doctors' findings showing that it is more likely an inflammatory process suggest that a means of treating chronic encephalitis or sleeping sickness may eventually be found because inflammatory conditions may lend themselves to treatment. Present method of treating the condition is to treat each symptom as it arises.

The injury responsible for production of abnormal sleep in humans as well as in animals is, the Chicago doctors report from their findings on Miss Maguire's brain, damage to the rear part of the hypothalamus region of the brain. Details of their studies appear in the October issue of the *Archives of Neurology and Psychiatry*, an A. M. A. publication.

Science News Letter, October 26, 1940

PHYSICS

New Instrument Measures Glow of Luminous Dials

LUMINOUS dials on clocks, watches, dashboard instruments, etc., can now have the brightness of their glow measured by a new instrument developed at the National Bureau of Standards by Dr. L. F. Curtiss, chief of the radioactivity section.

Stainless steel mirrors bring the light from the luminous paint into view adjacent to a luminous pattern from a reference lamp, the brightness of which can be controlled and calibrated. The instrument is very compact and rigid, and is not easily put out of adjustment by rough handling.

Science News Letter, October 26, 1940

A new extra-bright portable *battery light* for emergency fire and police department use and for emergency airplane landings, is described as powerful enough to permit reading a newspaper by its light from half a mile away.

MEDICINE

New Eye Tests to Aid Workers In the Defense Industries

Depth Perception and Acuity of Vision Are Vital In Many Jobs; Should Be Considered in Selecting Men

NEW EYE tests to protect the vision and speed the efficiency of workers in defense and other industries were announced by Dr. Hedwig S. Kuhn, of Hammond, Ind., at the meeting of the American Academy of Ophthalmology and Otolaryngology in Cleveland.

The tests, a new instrument for giving some of them, and the idea that workers must be selected for jobs on the basis of their eyesight as well as other requirements developed from Dr. Kuhn's study of 16,000 workers in such diverse industries as "chemicals, big steel and little steel, soap, public utilities, textiles, tanks, and even horse shoes."

This is apparently the first scientific study of the demands that modern machinery makes on the eyes of workers.

Five groups of eye defects and their significance were discovered is studies of occupations in which the visual requirements differed markedly. At one extreme of those studied was a crane operator who needed to judge distances 150 feet away; at the other a "looper" in a hosiery factory whose pay envelope depended on her ability to do piece work 8 inches from her eyes.

"To find acuity defects and a lack of depth perception is of vital importance for crane operators, but of no special concern to manual labor," Dr. Kuhn pointed out. "A marked muscle imbalance in clerical workers has been shown to be detrimental to their comfort and efficiency, while an extremely careful study of the five defect groups is essential in choosing or analyzing girls in looping at a distance of 8 inches. For the purposes of industry this type of practical analysis is the basis for deciding where to begin a personnel program of shifting jobs, and an insistence on corrective measures."

Science News Letter, October 26, 1940

PHOTOGRAPHY

Color Photographs At Night Penetrate Camouflage

COLOR photographs taken from military airplanes at night, which will penetrate the camouflage that might hide military objectives from ordinary reconnaissance pictures, can now be made by the U. S. Army Air Service. Recent tests have demonstrated the practicability of the method.

Though the popularity of color photography among amateur camera users has resulted in a great decrease in the time of exposure required for color film, it is still considerably slower than the fast black and white film used for ordinary aerial photography. Consequently, a vast amount of light is needed to take such pictures in the short exposures that must be given when photographing from the air.

This illumination is provided by flashlight bombs, which are released from the plane, after which they explode a burst of billions of candlepower of light. The flash takes about a sixth of a second, and the camera shutter is synchronized to operate with it. Flashes of various colors can be used to work most effectively with the different types of film. Camouflage that might conceal in light of one color may be plainly revealed in another.

Even for black and white aerial photography, such flashlight bombs have an advantage. The aviator can approach his objective in darkness which greatly reduces his chance of being hit with a projectile from an anti-aircraft gun, or of being seen from defending planes. Then too, the fact that the light comes from a single source may produce shadows which bring objects on the ground into better relief than they appear in the diffused light coming from the entire dome of the daytime sky.

The tests are reported by Major George W. Goddard, photographic expert, who has been in charge of aerial photographic work for the Army for more than 25 years and is stationed at Dayton, Ohio.

Science News Letter, October 26, 1940

ARCHAEOLOGY

Fear Athens' Fifth Wreck So Relics Are Moved

FEARFUL that Athens may be wrecked for a fifth time in its long history, as Fascist Blackshirts grow increasingly belligerent toward Greece, archaeologists have taken steps to protect the historic treasures unearthed in the old Market Place, or Agora, of Athens.

Objects which the American School of Classical Studies has brought to light in ten years' work at these ruins have been packed for shipment to a small country town, says Dr. T. Leslie Shear, of Princeton University, director of the School and of the expeditions. Records of the work now lie in bombproof shelters.

When Italy entered the war, Dr. Shear found it advisable to cease digging and returned to Princeton. It may be many years, he suspects, before the expedition can return to build a museum for the relics and wind up its excavations, which it expected to complete by 1941.

Outstanding among discoveries just before digging was abandoned is a mysterious collection of nearly 100 pottery-scrap ballots bearing the name of Kallixenos, son of Aristonymous. Like Aristides and Themistocles, this Greek was apparently a notable, among the unwilling candidates for banishment in the voting of 483 B.C. No mention of Kallixenos has been found in history, legend or classical literature.

Science News Letter, October 26, 1940

ECOLOGY

NATURE RAMBLINGS
by Frank Thone

Dictatorship Fails

DICTATORSHIP, rather than democracy, has characterized civilized man's attitude toward nature during many ages in the past. Instead of trying to find out what direction natural forces and processes were taking, and democratically cooperating as intelligent organisms should, we have all too often taken the attitude of the conqueror. We have decided just what we wanted to do, and imposed our imperious will. And nature has done what the conquered often do—by quiet but determined and remorseless sabotage destroyed the works we have wrought in our pride.

Thus, when Europeans came to eastern North America they found forests in possession of the land. They wanted fields of grain and tobacco and cotton, and pastures for their herds and flocks. So they cut and burned the forests wholesale, just to get rid of them. They plowed and planted and possessed the land according to their will.

Retribution was not long in coming. On the stony hills of the North and the clay hills of the South alike, erosion set in, and even in Colonial times such intelligent farmers as George Washington and Thomas Jefferson were trying to find means to renew the fading fertility of their acres and to stop the fast-advancing gullies.

After the Revolution, people poured over the mountains into the new lands of the West, there to repeat the same mistakes their fathers had made on the seaboard. East of the Mississippi they swept away the forests, west of it they plowed up the prairies and plains; everywhere they drained swamps and shallow lakes to get at the rich muck land on their bottoms.

Much of the land thus gained was good. The prairie area in particular, from central Illinois to central Nebraska, has become the great granary of the nation. But by no means all of these swift conquests brought the wealth that men sought in making them. Thinner forest soils disappeared, after yielding only a moderate living to the first generation of farmers and starving out their descendants. Drained lands were often underlain by masses of peat, which took fire and literally burned the fields away. During the last decade, large parts of the latest land conquests, the areas of the Great Plains broken and planted to wheat during the boom times of the first World War, rose up in dust storms and are gone with the wind.

The moral, ecologists point out, is that man should study the ways of nature, and profit by marching with them instead of against them. But only in the last few years have their fellow citizens shown any signs at all of heeding this sound counsel.

Science News Letter, October 26, 1940

RESOURCES

U. S. Need Not Depend On Southeast Asia's Goods

THE UNITED STATES can shake off its dependence on Southeast Asia's vitally important raw materials, and can develop New World sources and substitutes, sturdily declares Dr. Stephen B. Jones, University of Hawaii geographer.

"The cost of a day's fighting spent on research and subsidies would probably solve most of our raw-material-deficiency problems," Dr. Jones states. (*Geographical Review,* October and April)

"Unnecessarily alarming" is Dr. Jones' verdict on the views of Prof. Robert B. Hall of the University of Michigan, who regards the Far East as the one part of the world on which the United States is hazardously dependent.

Prof. Hall in the same journal recently sounded the warning: "Only on the lands west of the Pacific, and especially on Southeastern Asia, is our dependence so vital and complete that our very existence as a great industrial power, and perhaps even as an independent state, is threatened if the sources should be cut off."

From Southeastern Asia, the United States gets most, if not all, of five "first priority" materials — that is materials which we import almost entirely and for which no adequate substitutes have been found. Specifically, Southeastern Asia supplies 100% of the United States' manila fiber, 99% of its quinine, 98% of its rubber, 98% of its silk, and 93% of its tin. We are also dependent on the area for some other strategic materials, though to a less serious extent.

That three of the five outstandingly important imports are of vegetable origin, is pointed out by Dr. Jones, who says that two—quinine and rubber—come from plants native to tropical America, and the third could probably be acclimatized.

Science News Letter, October 26, 1940

Germany claims 107,000,000 people "under German administration."

NEW BOOKS ON SCIENCE

BIOLOGY

THIS LIVING WORLD, A College Course in Science—C. C Clark and R. H. Hall—*McGraw-Hill,* 519 p., illus., $3.25. First of a two-volume series published under the general title, *A College Course in Science.* The aim is to give the student a general idea of what life is about, rather than to serve as prerequisite to "advanced" courses. The approach therefore is informal, unhackneyed, very simple. The material presented comprises what is usually classified as geology, zoology and botany, but knowledge here is not kept in mutually exclusive compartments. Illustrations are in keeping with viewpoint and style of the text.

Science News Letter, October 26, 1940

GENERAL SCIENCE

THIS AMAZING PLANET—Roy Chapman Andrews—*Putnam,* 231 p., $2. Dr. Andrews has seen some of the most amazing things on this planet, and indeed has discovered not a few of them himself. Yet he retains a boyish freshness of wonder, not only at such things as a nest of dinosaur eggs in the Gobi desert but at the astonishing commonplaces that most of us pass by without noticing: the strength of an ant's jaws, the fineness of a silk fiber, the lordly ways of his white Persian cat. This book consists of a highly miscellaneous collection of little essays about all kinds of things, most of them only a few hundred words in length, but all of them instinct with the quality that keeps the world young: wonder.

Science News Letter, October 26, 1940

BOTANY

CHRONICA BOTANICA—*Chronica Botanica Co.,* P. O. Box 151, Waltham, Mass., Fortnightly, $7.50 per year. See page 264.

Science News Letter, October 26, 1940

PSYCHOLOGY

AVOCATIONAL INTEREST PATTERNS, A Study in the Psychology of Avocations—Donald E. Super—*Stanford Univ. Press,* 148 p., $2.25. Using the technique developed by Dr. Edward K. Strong, Jr., for the study of vocational interests, the author has made a study of hobbies, particularly photography, model building, stamp collecting and music.

Science News Letter, October 26, 1940

NUTRITION

DIETETICS SIMPLIFIED, The Use of Foods in Health and Disease (With Laboratory Section) (2d. ed.)—L. Jean Bogert and Mame T. Porter—*Macmillan,* 742 p., illus., $3. Designed primarily for hospital dietitians and students in home economics, there is much in this book that will be useful to the housewife who is willing to give the text a little study, and particularly for one who may have in her family someone requiring a special diet.

Science News Letter, October 26, 1940

PUBLIC HEALTH

INDUSTRIAL HEALTH IN WAR, A Summary of Research Findings Capable of Immediate Application in Furtherance of the National Effort—Gt. Brit. Medical Research Council, Industrial Health Research Board—*Brit. Library of Information,* 36 p., 15c. See p. 267.

Science News Letter, October 26, 1940

CHEMISTRY

CHEMISTRY IN THE SERVICE OF MAN (5th. Ed.)—Alexander Findlay—*Longmans, Green,* 398 p., $2.50. The previous four editions of this book have made it well and favorably known. In the eight years, since the last appeared, there have been many advances in chemical science. Dr. Findlay has now made many additions and alterations to cover these.

Science News Letter, October 26, 1940

CHEMISTRY

NEW WORLD OF CHEMISTRY (4th ed.)—Bernard Jaffe—*Silver Burdett,* 692 p., illus., $1.84. The rapid advance of chemistry is well shown by the fact that this excellent text book for high schools by a well-known interpreter of science now appears in a fourth revised edition, only a year after the third.

Science News Letter, October 26, 1940

CHEMISTRY

LABORATORY AND WORKBOOK UNITS IN CHEMISTRY—Maurice U. Ames and Bernard Jaffe—*Silver Burdett,* 267 p., 92c. This manual, which is intended to accompany Dr. Jaffe's "New World of Chemistry," when used as a text, should do much to enable the student and the teacher as well to obtain the greatest benefit from the course. The present is the third edition.

Science News Letter, October 26, 1940

BIBLIOGRAPHY

A LIST OF BOOKS FOR A COLLEGE STUDENT'S READING (The Trinity Booklist), (3rd. ed.)—Harry Todd Costello, ed.—*Trinity College, Hartford, Conn.,* 125 p., $1.

Science News Letter, October 26, 1940

CHEMISTRY

COLLECTED PAPERS OF WALLACE HUME CAROTHERS ON HIGH POLYMERIC SUBSTANCES—H. Mark and G. Stafford Whitby, eds.—*Interscience Pub.,* 459 p., illus. $8.50. At the time of his death in 1937, at the age of 41, Dr. Carothers headed the fundamental research in organic chemistry by the du Pont Company. In the twelve preceding years he had contributed the papers gathered here, many of which are now classics in the literature relating to the complicated atoms that are the basis of so much that modern chemistry has accomplished. "Nylon," which Science Service first reported to the world on Sept. 20, 1938, is but one of the products resulting from his work. See page 259.

Science News Letter, October 26, 1940

PHOTOGRAPHY

THE CAMERA GADGETEER — Hermon Gabriel—*Fomo,* 63 p. 75c. If you like gadgets and like photography you may have fun with this little book.

Science News Letter, October 26, 1940

MEDICINE

THE VIRUS, Life's Enemy—Kenneth M. Smith—*Cambridge* (*Macmillan*), 176 p. $2. See page 264.

Science News Letter, October 26, 1940

MATHEMATICS

NON-EUCLIDEAN GEOMETRY OR THREE MOONS IN MATHESIS—Lillian R. Lieber; drawings by Hugh Gray Lieber—*H. G. L. R. Lieber, 258 Clinton Ave., Brooklyn, N. Y.,* 40 p., $1.25. Serious mathematics written in a form that looks like free verse but isn't. Clever illustrations make the concepts easier to absorb, and provide a little book that would have delighted C. L. Dodgson.

Science News Letter, October 26, 1940

RADIO

PRECIPITATION-STATIC RADIO-INTERFERENCE PHENOMENA ORIGINATING ON AIRCRAFT—E. C. Starr—*Oregon State Engineering Experiment Station,* 107 p., 75c. A report on a series of researches made in cooperation with United Air Lines, to increase the reliability of aviation radio.

Science News Letter, October 26, 1940

BIOLOGY

FUNDAMENTALS OF BIOLOGY, ANIMAL AND PLANT (2d ed.)—William C. Beaver—*Mosby,* 889 p., 301 text illus., 14 color plates, $4.50. (Price correction.)

Science News Letter, October 26, 1940